

Cello Platform Boxes: Hidden Dangers

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(first printed in *The Cello Scroll*, newsletter of the Chicago Cello Society, January 1989)

Hoosier Cellist Escapes Serious Injury When Cello Platform Box Blows Up by George Goltermann, Music Editor

BLOOMINGTON, Ind. -- Concert patrons were shocked to see a cello recital blown all out of proportion when the platform box, on which a university cellist was performing, exploded. Professor Hanus Wihan, of Maxinkuckee State College, making a guest appearance at Purdue Memorial Auditorium on the campus of Indiana University, escaped serious injury. An investigation into the matter by the Indiana branch of OSHA was undertaken immediately. Officials said that they had never seen anything like it . . .

As is plainly evident from this newspaper article excerpt, it is just plain foolishness for a cellist to take such risks! I happened to attend the performance when this incident occurred and was horrified to see such, well, foolishness on the part of Professor Wihan. He should have known more about the laws of acoustics and the dangers of using a sealed platform box. Unfortunately, many other cellists know little about the danger of explosion from the build-up of sound energy when there are no escape holes for that energy drilled into the sides of the box [Diagram No. 1].

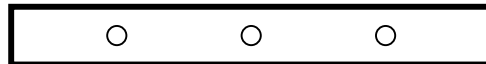
Diagram No. 1



Prof. Wihan's Cello Platform Box (pre-mishap)

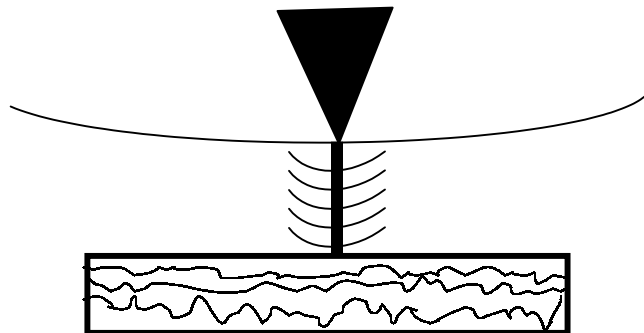
Happily, a safe platform box is easy to construct. Notice the important inclusion of the evenly-spaced holes drilled along all four sides (one side shown) [Diagram No. 2].

Diagram No. 2.



New Improved Cello Platform Box
(inclusion of sound energy escape holes)

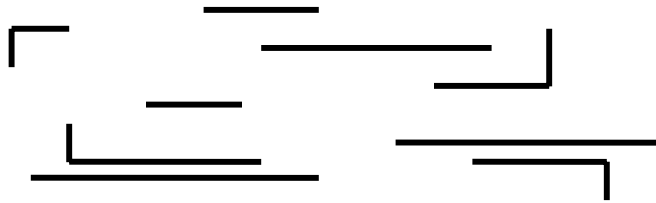
As you know, some of the sound energy from the cello is transmitted through the endpin into the floor or platform box [Diagram No. 3].



Sound Energy Being Trapped in a Closed Platform Box

When the endpin rests on a *closed* platform box, however, the sound energy transmitted from the cello has no means of escape. Serious consequences can ensue [Diagram No. 4].

Diagram No. 4



Unretouched Diagram of Prof. Wihan's Cello Platform Box in the Process of Exploding

Observe the following equation:

length of open cello string = 69 cm mass of string = 75 g tension = 7×10^8 dynes

$$v_w = \frac{F}{m/L} = \frac{7 \times 10^8 \text{ dynes}}{75 \text{ g} / 69 \text{ cm}} = \text{lots of energy, too much for one platform box to handle}$$

Yet another proof of the power of this energy unleashed by a competent cellist is seen in this equation:

$$E = \frac{\Delta\pi}{\log \Sigma} = \frac{346 \text{ m/s} \times 3.1415926}{\log \Sigma}$$

= an incredible amount of energy; Wihan should have know better

Even as you read this article, you may be wondering why concert halls do not blow up, especially when a symphony orchestra is releasing tremendous amounts of sound energy. The reason is quite simple: the AC/heating ducts allow the sound energy to escape to the outside of the auditorium where they are dissipated throughout the building. You can relax the next time you attend a concert at Symphony Hall.

There is good news for us cellists as a result of "Wihan's mishap." An embarrassed and contrite Prof. Wihan has made available the necessary diagrams for building your own *safe* cello platform box, known as SafeBox™. He will also send you a specially designed half-inch auger for drilling the essential holes in the sides of the box. Send \$15 plus \$3 shipping and handling to:

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 Fax: 555 SAF-EBOX